CODING FORM FOR SRC INDEXING **REVISED 10/15/86**

Microfiche No.

OTS0522694-1

New Doc I.D.

89-900000209

Old Doc I.D.

8EHQ-0490-0876

Date Produced

4/09/90

Date Recieved

4/20/90

TSCA section

8E

Submitting Organization

ICI AMERICAS INC

Contractor

Document Title

LETTER FROM ICI AMERICAS INCORPORATED RESPONDING TO LETTER DATED 031490 REGARDING INFORMATION ON METHYLENE DIISOCYANATE WITH ATTACHMENTS

Chemical Category

METHYLENE DIISOCYANATE

CONTAINS NO CBI

13-pages

8EHQ-0490-0876 FLMP

PDCN-88-900000048

89-900000209

April 9, 1990

ICI Americas Inc.
Safety, Health & Environmental Affairs Group
Wilmington
Delaware 19897
Telephone (302) 886-3000
Fax (302) 886-5585

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Document Processing Center (TS-790)
[Attn: Section 8(e) Coordinator]
Office of Toxic Substances
U. S. Environmental Protection Agency
401 M Street, S.W.
Washington, DC 20460

Subject: **8EHQ-0290-0876**
(METHYLENE DIISOCYANATE)

We are responding to your letter of March 14, 1990, (copy attached) where a request was made to describe the actions being taken to:

1. notify workers/others about the reported information and,

2. to reduce or eliminate exposure to MDI.

STEPS TAKEN TO CONTROL EXPOSURE:

ICI Americas Inc. has an aggressive product stewardship program in place to insure that our employees and customers understand the potential hazards of MDI and how to avoid these hazards. We train our employees in safe handling practices including appropriate skin and respiratory protection. Upon request, or when ICI feels it necessary, we also provide this same type of training to customers' employees.

Medical surveillance is routinely performed on exposed ICIA employees.

Industrial hygiene surveys are conducted in our research facilities and manufacturing operations. These surveys are also conducted in our customers' locations when ICI deems it appropriate and/or upon request. Results of these surveys are communicated to affected employees. When necessary, engineering controls are modified or installed to control exposures. Supplied air respirators and other needed personal protective equipment are used where engineering controls are not feasible.

At ICI Americas' sites, the industrial hygiene program has been in effect since 1971 and is extremely effective as evidenced by monitoring records. These indicate MDI inhalation exposure to be consistently below the ACGIH TLV of 5 ppb 8 hr. TWA and the OSHA PEL of 20 ppm (ceiling). Skin contact with the material is prevented using gloves, apron and arm covers or full body suit, depending upon the degree of potential exposure. As such, stringent precautions are in place to prevent skin and inhalation exposure to this compound and we do not feel additional precautions are needed.

NOTIFICATION OF EMPLOYEES AND OTHERS:

Attached is a copy of our current MSDS for a MDI-containing product. We are currently warning about the potential for respiratory and skin sensitization. Our MSDSs are routinely modified upon receipt of new information. In accordance with the OSHA Hazard Communication Standard, changes to our MSDSs are made within 90 days of the receipt of new information. As part of our Hazard Communication Program, MSDSs are available to all exposed employees and our customers receive copies of revised MSDSs. Employees will be notified of the existence of the revised MSDS and once available, it will be reviewed with them.

ICI Americas has made available to all US producers of MDI through the International Isocyanate Institute, American Region-Toxicology and Occupational Health Subcommittee, the complete preprint cited in the Section 8(e) notification.

Sincerely,

G. A. Sunshine
General Manager

GAS/rh/EO3(4)

Attachment(s)

3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SAFETY, HEALTH & ENVIRONMENTAL AFFAIRS ADMINISTRATION
MAR 16 1990

MAR 14 1990

OFFICE OF PESTICIDES AND TOXIC SUBSTANCES

CERTIFIED MAIL

Dr. G. A. Sunshine
Safety, Health and
Environmental Affairs Group
ICI Americas Inc.
Wilmington, Delaware 19897

Dear Sir:

With regard to:

Sec. 8(e) notice on: Methylene Diphenyldiisocyanate (MDI)

Submitted by: ICI Americas Inc.

Date submitted: February 6, 1990

EPA Document Control Number: 8EHQ-0290-0876

The Office of Toxic Substances (OTS) has completed a preliminary evaluation of the above referenced submission under Section 8(e), the "substantial risk" information reporting provision of the Toxic Substances Control Act (TSCA). The enclosed status report is the result of that preliminary OTS evaluation but does not necessarily represent EPA's conclusion on MDI.

In view of EPA's interest in effective and appropriate hazard/risk communication, as well as corporate actions taken on a voluntary basis in response to new chemical toxicity or exposure information, please describe the actions that ICI Americas has taken or plans to take 1) to notify workers/others about the reported information, and 2) to reduce or eliminate exposure to MDI. EPA would appreciate receiving copies of Material Safety Data Sheets and labels that have been revised to reflect the reported findings.

In responding to this request for information, or in otherwise communicating with EPA about this Section 8(e) submission, please refer to the Document Control Number that has been assigned to the submission. As in the case of initial Section 8(e) notices, all responses/correspondence will be placed in the public files unless confidentiality is claimed according to the procedures outlined in Part X of EPA's TSCA Section 8(e) policy statement ("Statement of Interpretation and Enforcement Policy; Notification of Substantial Risk" 43 FR 11110; March 16, 1978). Any confidentiality claims

should be supported by submission of information as described in the enclosed item entitled "Support Information for Confidentiality Claims."

All available information requested by this letter should be transmitted to the EPA Document Processing Center at the address provided below within 20 working days of your receipt of this letter; any requested information or supplemental information that becomes available following your response to this EPA letter should be sent to EPA immediately upon your company's receipt of such information.

Document Processing Center (TS-790)
(Attn: Section 8(e) Coordinator)
Office of Toxic Substances
U.S. Environmental Protection Agency
401 "M" Street, S.W.
Washington, D.C. 20460

Should you have any questions or comments prior to responding to the Agency's request for additional information, please contact Ms. Judith Loranger of the Chemical Screening Branch/ECAD at (202)-382-2281.

The Environmental Protection Agency looks forward to continued cooperation with ICI Americas in its ongoing efforts to evaluate and minimize the potential risks posed by chemical substances to health or the environment.

Sincerely,

James F. Darr

James F. Darr (TS-778)
Section Head, Chemical Risk
Identification Section/CSB

Enclosures

Support Information for Confidentiality Claims

Information submitted under specific reporting requirements of the Toxic Substances Control Act (TSCA) or in support of TSCA is subject to the provisions of Section 14 of TSCA and to EPA's Regulations on the Confidentiality of Business Information (see 40 CFR Part 2). You must comply with the following procedures to assert a claim of confidentiality for the information solicited in the attached letter. Failure to follow these procedures fully at the time you submit the information to EPA will be interpreted by the Agency as a waiver of your claim of confidentiality.

Asserting a Claim

Information claimed as confidential must be clearly marked by boxing, circling or underlining. All pages containing such information should also be stamped **"CONFIDENTIAL"**. Care should be taken to ensure that these markings do not obscure the submission's text.

Sanitized Copy

Two copies must be submitted of any documents containing information claimed as confidential. One copy should be complete, with the information being claimed as confidential marked in the manner described in the preceding paragraph. The other copy should have all of the information claimed as confidential excised. This version will be placed in EPA's Public Files.

Substantiating Claims of Confidentiality

Detailed written responses to the following questions must be provided at the time you submit information for any portion of the information you claim as confidential. Your responses should be as specific as possible, with examples as appropriate, and should provide substantiation arguments for all types of information (e.g., sales or production/importation volumes, chemical identity, company identity) you claim as confidential.

1. For what period of time do you assert this claim of confidentiality? If a claim is to extend until a certain event or point in time, please indicate that event or time period. Explain why the information should remain confidential until such event or time.

2. Have there been any confidentiality determinations made by EPA, other Federal agencies, or courts in connection with this information? If so, please enclose copies.

(over)

6

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
PESTICIDES AND
TOXIC SUBSTANCES

DATE: MAR 5 1990 APPROVED: James F. Darr 3/8/90

SUBJECT: Status Report[1] 8EHQ-0290-0876
Judith M Loranger

FROM: Judith M. Loranger, Biologist
Chemical Risk Identification Section/CSB

TO: James F. Darr, Section Head
Chemical Risk Identification Section
Chemical Screening Branch/ECAD/OTS/OPTS

SUBMISSION DESCRIPTION

ICI Americas Inc. has submitted a copy of a manuscript entitled "Animal Models for Predicting Hypersensitivity Reactions to Small Molecules" that has reportedly been accepted for publication in **Immunotoxicology and Immunotoxicity of Metals.** In the submission cover letter, ICI Americas reported that this "manuscript describes method development on an animal model for predicting respiratory allergy." The ICI Americas submission also included a data table outlining the serological, pulmonary and dermal responses of guinea pigs injected intradermally with methylene diphenyldiisocyanate (MDI; CAS No. 101-68-8). According to ICI Americas, the data indicate "that MDI injected intradermally in quinea pigs can elicit a sensitization reaction including a pulmonary response as measured by respiratory rate." ICI Americas also stated that although it is well known that inhalation of MDI can induce pulmonary sensitization in exposed animals and humans, the "animal data on intradermal injections indicate new information regarding route of exposure."

---

[1] *This status report is the result of a preliminary evaluation of information that has been submitted to EPA under Section 8(e), the "substantial risk" information reporting provision of the Toxic Substances Control Act (TSCA). The statements made in this status report should not be regarded as expressing final Agency policy or intent with respect to the subject chemical(s). Any review of this status report should take into account that the report may be based on incomplete information.*

1

USE AND EXPOSURE POTENTIAL

The Condensed Chemical Dictionary (10th Edition) states that MDI is used to prepare polyurethane resins and spandex fibers and to bond rubber to rayon and nylon.

COMMENTS/RECOMMENDATIONS

Immediately upon receipt, the Chemical Screening Branch provided a full copy of this TSCA Section 8(e) notice to the Risk Analysis Branch (RAB/ECAD/OTS) for inclusion in its ongoing review of MDI and other diisocyanates. It should be noted that the Chemical Screening Branch prepared a "Chemical Hazard Information Profile" (CHIP) on MDI in 1984. Further, MDI is the subject of Section 8(d) and 8(c) information gathering rules.

In its Section 8(e) notice, ICI Americas reported that the provided information was also being submitted to EPA under Section 8(d) of TSCA. The following discussion pertains to the relationship between the TSCA Section 8(e) and Section 8(d) reporting obligations. The Section 8(e) reporting requirement applies to any "substantial risk" information obtained during the conduct of a study the final report of which is required ultimately to be submitted to EPA under Section 8(d) of TSCA. For example, EPA has received a number of Section 8(e) submissions concerning interim results of studies "listed" under Section 8(d) as being underway. The Section 8(e) reporting that took place in such instances occurred because a Section 8(e) obligation was incurred before submission of the final report of the study was required under Section 8(d). In other words, if the required reporting pursuant to Section 8(d) occurs prior to or coincidental with the incurring of a Section 8(e) requirement, the information does not need to be submitted also to the Section 8(e) docket. The purpose of this particular exemption is not to change substantially the Section 8(e) obligation, but is designed merely to avoid requiring duplicative reporting except in those cases where timeliness considerations are paramount.

a) In view of EPA's interest in effective and appropriate hazard/risk communication, as well as company actions taken on a voluntary basis in response to new chemical toxicity/exposure data, ICI Americas will be requested to describe the actions that the company has taken or plans to take 1) to notify workers/others about the reported information, and 2) to reduce or eliminate exposure to the subject chemical. In addition, ICI Americas will be asked also to provide copies of Material Safety Data Sheets and labels that have been revised to reflect the reported findings.

b) The Chemical Screening Branch will continue to forward all reported information to the Risk Analysis Branch for inclusion in their ongoing evaluation of MDI as well as other diisocyanates.

d

c) The Chemical Screening Branch will send copies of this status report to NIOSH, OSHA, CPSC, FDA, NTP, OSWER/EPA, OW/EPA, ORD/EPA, OAR/EPA and OPP/OPTS/EPA, RAB/ECAD/OTS; in addition, copies of this status report will be sent to the Environmental Assistance Division/OTS (formerly the TSCA Assistance Office/OTS) for further distribution.

MATERIAL SAFETY DATA SHEET 9

2285

ICI Polyurethanes Group
West Deptford, New Jersey 08066
Phone, 24 hours: (302) 886-3000
Medical inquiries: (800) 327-8633

Issue Date: 09/28/89

Rev.: G
CIDS: 23008

SECTION 1 NAME & HAZARD SUMMARY

Material name: RUBINATE M (Polymeric MDI)

Hazard summary (as defined by OSHA Hazard Comm. Std., 29 CFR 1910.1200):
Physical hazards: Unstable.
Health hazards: Irritant (eye, skin, respiratory passages, skin sensitizer), inhalation (TLV). Based on MDI - harmful (respiratory sensitizer, lung injury)

Read the entire MSDS for a more thorough evaluation of the hazards.

SECTION 2 INGREDIENTS

	%	OSHA PEL
*** 4,4'-Diphenylmethane-diisocyanate (MDI, CAS 101-68-8)	~50	0.02 ppm, ceiling
Similar structure oligomers (CAS 9016-87-9)	~50	Not listed

Ingredients not precisely identified are proprietary or nonhazardous. Values are not product specifications.

SECTION 3 PHYSICAL DATA

Appearance and odor: Dark brown, viscous liquid with slight odor.
Boiling point: Decomposes at 646°F, 341.1°C
Vapor pressure (mm Hg at 20°C): Below 0.0001
Vapor density (air = 1): 8.6
Solubility in water: Reacts
pH: No data
Specific gravity: 1.2
% Volatile by volume: No data

SECTION 4 FIRE AND EXPLOSION HAZARD DATA

Flash point: 425°F, 218°C (COC)
Autoignition temperature: No data
Flammable limits (STP): No data

Extinguishing media:
Dry chemical, foam, carbon dioxide, halogenated agents. If water is used, use very large quantities. The reaction between water and hot isocyanate may be vigorous.

Special fire fighting protective equipment:
Self-contained breathing apparatus with full facepiece and protective clothing.

MATERIAL SAFETY DATA SHEET (continued) RUBINATE M

SECTION 4 FIRE AND EXPLOSION HAZARD DATA (continued)

Unusual fire and explosion hazards:

Water contamination will produce carbon dioxide. Do not reseal contaminated containers as pressure buildup may rupture them.

SECTION 5 REACTIVITY DATA

Stability:

Stable under normal conditions.

Incompatibility:

This product will react with any materials containing active hydrogens, such as water, alcohol, ammonia, amines, alkalies and acids. The reaction with water is very slow under 50°C, but is accelerated at higher temperatures and in the presence of alkalies, tertiary amines, and metal compounds. Some reactions can be violent.

Hazardous decomposition products:

Combustion products: Carbon dioxide, carbon monoxide. Nitrogen oxides, ammonia. Trace amounts of hydrogen cyanide.

Hazardous polymerization:

May occur. High temperatures in the presence of alkalies, tertiary amines, and metal compounds will accelerate polymerization. Possible evolution of carbon dioxide gas may rupture closed containers.

SECTION 6 HEALTH HAZARD ASSESSMENT

General:

This health hazard assessment is based on information from commercial and scientific literature.

Ingestion:

The acute oral LD50 in rat is reported to be above 10,000 mg/kg. Relative to other materials, a single dose of this product is practically nontoxic by ingestion. Irritation of the mouth, pharynx, esophagus and stomach can develop following ingestion.

Eye contact:

This material will probably irritate human eyes following contact.

Skin contact:

No irritation is likely to develop following short contact periods with human skin. Skin sensitization and irritation may develop after repeated and/or prolonged contact with human skin. Prolonged or repeated skin contact with MDI can induce delayed skin reactions several hours after overexposure.

Skin absorption:

Systemically toxic concentrations of this product will probably not be absorbed through human skin.

11

MATERIAL SAFETY DATA SHEET (continued) RUBINATE M

SECTION 6 HEALTH HAZARD ASSESSMENT (continued)

Inhalation:

Vapors and aerosols can irritate eyes, nose and respiratory passages. Severe overexposure may lead to pulmonary edema. MDI can induce respiratory sensitization with asthma-like symptoms similar to those induced by TDI (toluene diisocyanate). Symptoms include chronic cough, tightness of chest with difficulty in breathing. These symptoms may be immediate or delayed up to several hours after exposure. There are reports that chronic exposures may result in permanent decreases in lung function.

Other effects of overexposure:

No other adverse clinical effects have been associated with exposures to this material.

First aid procedures:

Skin: Wash material off of the skin with plenty of soap and water. If redness, itching, or a burning sensation develops, get medical attention.

Eyes: Immediately flush with plenty of water for at least 15 minutes. If redness, itching, or a burning sensation develops, have eyes examined and treated by medical personnel.

Ingestion: Give 1 or 2 glasses of water to drink. If gastrointestinal symptoms develop consult medical personnel. (Never give anything by mouth to an unconscious person.)

Inhalation: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is labored, give oxygen. Consult medical personnel.

SECTION 7 SPILL OR LEAK PROCEDURES

Steps to be taken in case material is released or spilled:

Wear skin, eye, and respiratory protection during cleanup. Soak up material with absorbent and shovel into a chemical waste container. Cover container, but do not seal, and remove from work area. Prepare a decontamination solution of 0.2-0.5% liquid detergent and 3-8% concentrated ammonium hydroxide in water (5-10% sodium carbonate may be substituted for the ammonium hydroxide). Follow the precautions on the supplier's material safety data sheets. All operations should be performed by trained personnel familiar with the hazards of the chemicals used. Treat the spill area with the decontamination solution, using about 10 parts of solution for each part of the spill, and allow it to react for at least 10 minutes. Carbon dioxide will be evolved, leaving insoluble polyureas. For major spills, call CHEMTREC (Chemical Transportation Emergency Center) at 800-424-9300.

Disposal method:

Slowly stir the isocyanate waste into the decontamination solution described above using 10 parts of the solution for each part of the isocyanate. Let stand for 48 hours, allowing the evolved carbon dioxide to vent away. Neutralize the waste. Neither the solid nor the liquid portion is a hazardous waste under RCRA, 40 CFR 261.

SECTION 7 SPILL OR LEAK PROCEDURES (continued)

Container disposal:

Drums must be decontaminated in properly ventilated areas by personnel protected from the inhalation of isocyanate vapors. Spray or pour 5-15 liters of decontaminating solution into the drum, making sure the walls are well rinsed. Leave the drum soaking unsealed for 48 hours. Pour out the decontaminating solution and triple rinse the empty container. Puncture or otherwise destroy the rinsed container before disposal.

SECTION 8 SPECIAL PROTECTION INFORMATION

*** TLV® or suggested control value:

No ACGIH TLV or OSHA PEL is assigned to this mixture. Control of exposure to below the PEL for the ingredients (see Section 2) may not be sufficient. Minimize exposure in accordance with good hygiene practice. ACGIH TLV for MDI is 0.005 ppm 8-hour TWA. The OSHA PEL for MDI is 0.02 ppm, ceiling. NIOSH recommends 0.005 ppm TWA and 0.02 ppm STEL. These control limits do not apply to previously sensitized individuals or to individuals with existing respiratory disease, such as chronic bronchitis, emphysema, or asthma. Sensitized individuals should be removed from any further exposure.

Ventilation:

If needed, use local exhaust ventilation to keep airborne concentrations below the TLV. Follow guidelines in the ACGIH publication "Industrial Ventilation." Exhaust air may need to be cleaned by scrubbers or filters to reduce environmental contamination.

Respiratory protection:

Because of the low vapor pressure, ventilation is usually sufficient to keep vapors below the TLV at room temperatures. Exceptions are when the material is sprayed or heated. If airborne concentrations exceed or are expected to exceed the TLV, use MSHA/NIOSH approved positive pressure supplied air respirator with a full facepiece, or an air-supplied hood. For emergencies, use a positive pressure self-contained breathing apparatus. Air purifying (cartridge type) respirators are not approved for protection against isocyanates.

Protective clothing:

Gloves determined to be impervious under the conditions of use. Depending on conditions of use, additional protection may be required such as apron, arm covers, or full body suit. Wash contaminated clothing before rewearing.

Testing of some commercially available protective clothing indicates that clothing constructed of butyl rubber, nitrile rubber, Saranex® coated Tyvek® and some neoprene garments have excellent resistance to permeation by MDI. Clothing constructed of neoprene/latex rubber and some PVC garments exhibited limited resistance to permeation by MDI. Clothing constructed of polyethylene, latex rubber, PVC or polylaminated Tyvek® showed little resistance to permeation by MDI. Protective clothing should be selected and used in accordance with "Guidelines for the Selection of Chemical Protective Clothing" published by ACGIH.

MATERIAL SAFETY DATA SHEET (continued) RUBINATE M

SECTION 8 SPECIAL PROTECTION INFORMATION (continued)

Eye protection:
Chemical tight goggles; full faceshield in addition if splashing is possible.

Other protective equipment:
Eyewash station and safety shower in work area.

SECTION 9 SPECIAL PRECAUTIONS OR OTHER COMMENTS

Special precautions or other comments:
Prevent skin and eye contact. Observe TLV limitations. Avoid breathing vapors or aerosols. Workers should shower and change to fresh clothing after each shift. A sensitized individual should not be exposed to the product which caused the sensitization. Store in tightly sealed containers to protect from atmospheric moisture. Store in a cool area. Individuals with existing respiratory disease such as chronic bronchitis, emphysema or asthma should not be exposed to isocyanates. These individuals should be identified through baseline and annual evaluation and removed from further exposure. Medical examination should include medical history, vital capacity, and forced expiratory volume at one second.

SECTION 10 REGULATORY INFORMATION

TSCA (Toxic Substances Control Act) Regulations, 40 CFR 710:
All ingredients are on the TSCA Section 8(b) Inventory.

CERCLA and SARA Regulations (40 CFR 355, 370, and 372):
Section 313 Supplier Notification. This product contains the following toxic chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372: MDI (CAS 101-68-8), 50%.

The information herein is given in good faith
but no warranty, expressed or implied, is made.

Prepared/Reviewed: 02/01/89
CCDB: C11021

***This line or section contains revisions or new statements since the last issue date.

CERTIFICATE OF AUTHENTICITY

THIS IS TO CERTIFY that the microimages appearing on this microfiche are accurate and complete reproductions of the records of U.S. Environmental Protection Agency documents as delivered in the regular course of business for microfilming.

Data produced 9 (Month) 19 (Day) 90 (Year)

Marcia Tubolino
Camera Operator

Place Syracuse (City) New York (State)

AMTEK corp